

SANYO

INSTRUCTION MANUAL

TLS-S2500P

Time Lapse Video Cassette Recorder

English

GB

Time Lapse Videorecorder

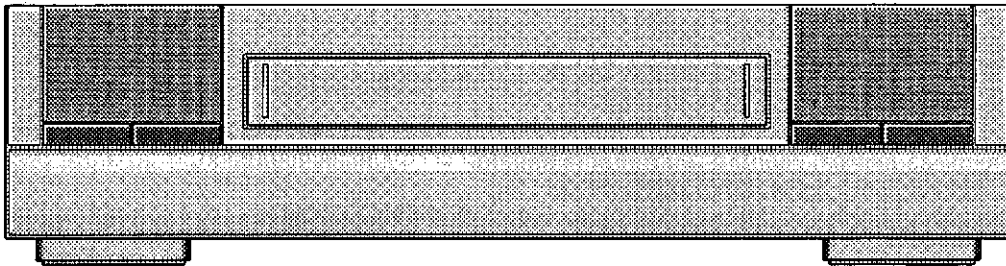
Deutsch

D

Magnétoscope à cassette cyclique

Français

F



PRECAUTIONS

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR OTHER MOISTURE.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

If the power supply cord (AC power cord) of this appliance is damaged, it must be replaced. Return to a SANYO Authorised Service Centre for replacement of the cord.

CAUTION: Do not put your hand or other objects in the cassette loading slot because of risk of injury or accident. Be sure to keep small children away from the VCR.

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Location

For safe operation and satisfactory performance of your VCR, keep the following in mind when selecting a place for its installation:

- Shield it from direct sunlight and keep it away from sources of intense heat.
- Avoid dusty or humid places.
- Avoid places with insufficient ventilation for proper heat dissipation. Do not block the ventilation holes at the top and bottom of the VCR. Do not place the unit on a carpet because this will block the ventilation holes.
- Install the VCR in a horizontal position only.
- Avoid locations subject to strong vibrations.
- Avoid moving the VCR between cold and hot locations (see "Moisture Condensation Problems", this page).
- Do not place the VCR directly on top of the TV, as this may cause playback or recording problems.

Avoiding Electrical Shock and Fire

- Do not handle the power cord with wet hands.
- Do not pull on the power cord when disconnecting it from an AC wall outlet. Grasp it by the plug.
- If any liquid is spilled on the VCR, unplug the power cord immediately and have the unit inspected at a factory-authorized service centre.
- Do not place anything directly on top of this VCR.

Moisture Condensation Problems

Cause:

When the VCR is first installed, moved from a cold area to a warm area or placed in a location with high humidity, dew (moisture) may form in the unit. The Dew indicator (d d d d) blinks. If you operate the VCR with dew inside, damage may result.

Prevention:

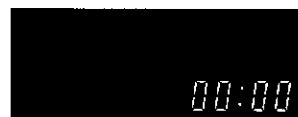
- 1 Make all necessary connections.
- 2 Plug the power cord into a 220 – 240 V AC outlet.
- 3 Do not operate the VCR for approximately 2 hours.

When the VCR reaches room temperature, the Dew indicator (d d d d) will turn off and the VCR will be ready to operate.

Power on/off

Power is switched on/off by pressing the **POWER** button.

Power off display



Power on display



"Power off" is the condition in which only the time is displayed.

Disconnect the mains lead from the wall socket if the VCR is not to be used for a long time.

FEATURES

- S-VHS compatible
- Field playback
- 12, 24-hour mode recording audio playback
- Autorepeat recording
- Alarm recording function
- On-screen mode setting
- Integrated time date generator
- Alarm scan function
- Forward field advance function
- 30-day memory backup
- Security lock
- Head-cleaning function


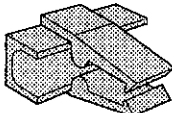
What is Time-Lapse Video?

A standard VCR records 50 images (fields) per second, while this time lapse VCR can record at different rates (from 1 image every 1/10 sec. to 1 image every 321/50 sec.). This feature makes it possible to record up to 963 hours on a single video tape. As a result, this unit is extremely useful for long-term monitoring or recording changes that take place slowly over an extended period of time (such as the blooming of a flower).

If a tape that was recorded in time-lapse mode is played back in the normal 3-hour mode, the speed of the tape will be increased by anywhere from 5 to 321 times, depending on the speed the original recording was made at, so that the slow changes that were recorded can be viewed at a much faster speed.

ACCESSORIES

Check to make sure that all the accessories listed below have been included with your VCR.

Power cord	Holder
	

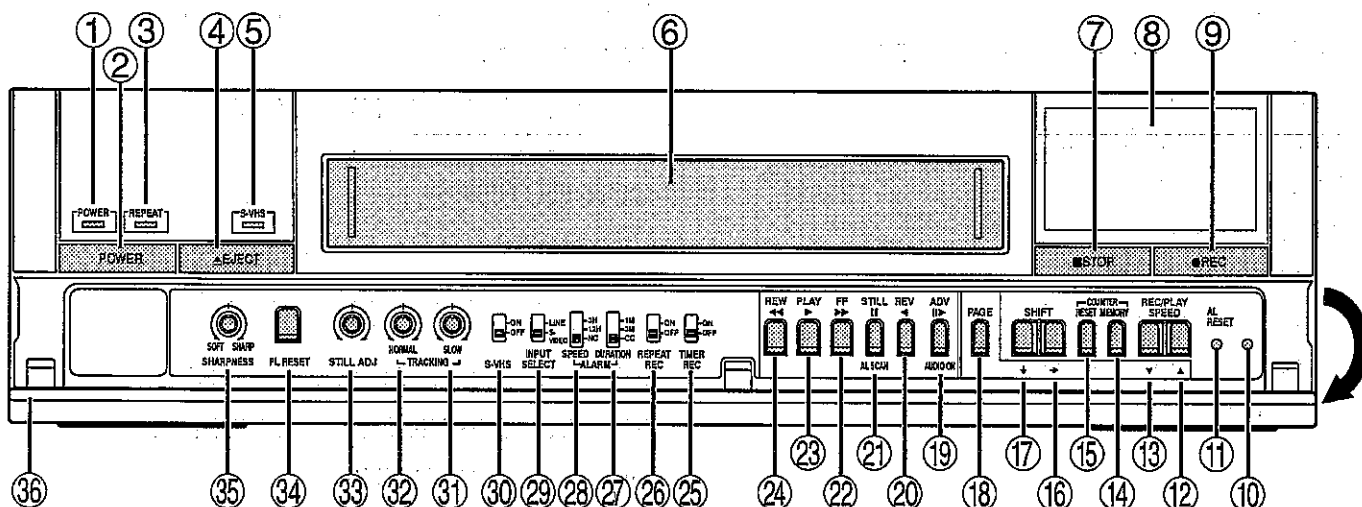
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LOCATIONS OF CONTROLS AND INDICATORS

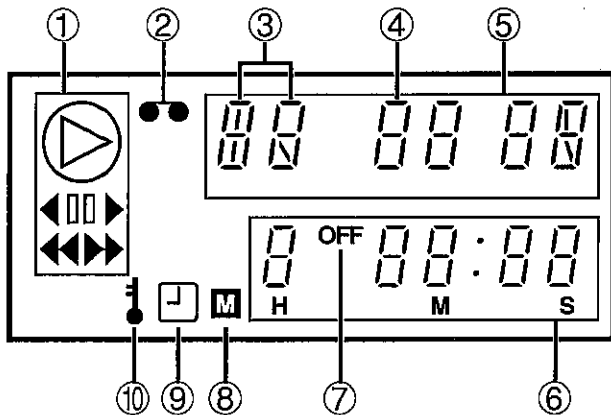
Front Panel



- ① **POWER LED**
- ② **POWER** button
- ③ **REPEAT LED** (autorepeat recording indicator)
- ④ **EJECT** button
- ⑤ **S-VHS LED**
- ⑥ Cassette loading slot
- ⑦ **STOP** button
- ⑧ Digital display panel
- ⑨ **REC** (record) button
- ⑩ **MEMORY RESET** button
- ⑪ **AL RESET** button
- ⑫ **REC/PLAY SPEED ▲** button
(increase recording/playback speed)
- ⑬ **REC/PLAY SPEED ▼** button
(decrease recording/playback speed)
- ⑭ **COUNTER MEMORY** button
- ⑮ **COUNTER RESET** button
- ⑯ **SHIFT →** (display position right) button
- ⑰ **SHIFT ↓** (display position down) button
- ⑱ **PAGE** button
- ⑲ **ADV/AUDIO ON** button
- ⑳ **REV** (reverse playback) button
- ㉑ **STILL/AL SCAN** button
- ㉒ **FF** (fast forward) button
- ㉓ **PLAY** button
- ㉔ **REW** (rewind) button
- ㉕ **TIMER REC** switch
- ㉖ **REPEAT REC** switch
- ㉗ **ALARM DURATION** switch
- ㉘ **ALARM SPEED** switch
- ㉙ **INPUT SELECT** switch
- ㉚ **S-VHS** switch
- ㉛ **TRACKING (SLOW)** control
- ㉜ **TRACKING (NORMAL)** control
- ㉝ **STILL ADJ** control
- ㉞ **PL RESET** button
- ㉟ **SHARPNESS** control
- ㊱ Front door

LOCATIONS OF CONTROLS AND INDICATORS

Digital Display



① Operation Indicators

They display the actual operation mode.

Operation Mode	Indicator
Record (REC)	○
Record pause (REC PAUSE)	○ +
Playback (PLAY)	▷
Still image (STILL)	▷ +
Fast forward (FF)	▶▶
Rewind (REW)	◀◀
Cue (CUE)	▷ + ▶▶
Review (REVIEW)	▷ + ◀◀
Reverse playback (RVS PLAY)	▷ +
Field shift forward (FIELD SHIFT +)	▷ +

② **Cassette indicator**
 Comes on when a cassette is loaded.

③ **Alarm indicator**
 Flashes when an alarm is being recorded:



Comes on after the alarm has been recorded:



④ **Power Loss indicator**
 Comes on after a power loss.

- ⑤ **Mode display**
- Recording/playback speed mode
 - Alarm scan mode
 - Dew display



- ⑥ **Counter display**
- Time display
 - Linear time counter display

⑦ **OFF indicator** OFF
 Comes on when the tape end has been reached after a recording, except during autorepeat recording mode.

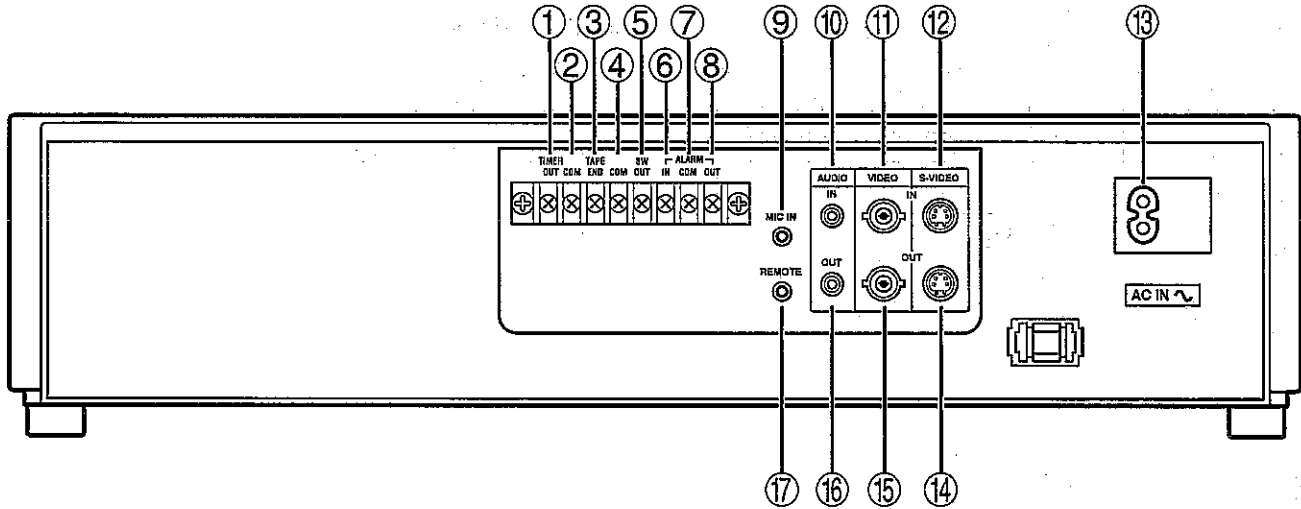
⑧ **Memory Stop indicator**
 Comes on when the memory stop function is engaged.

⑨ **Timer Recording indicator**
 Comes on when in timer recording stand-by mode, or during a timer recording.

⑩ **Security lock indicator**
 Comes on when the security lock is engaged.

LOCATIONS OF CONTROLS AND INDICATORS

Back Panel

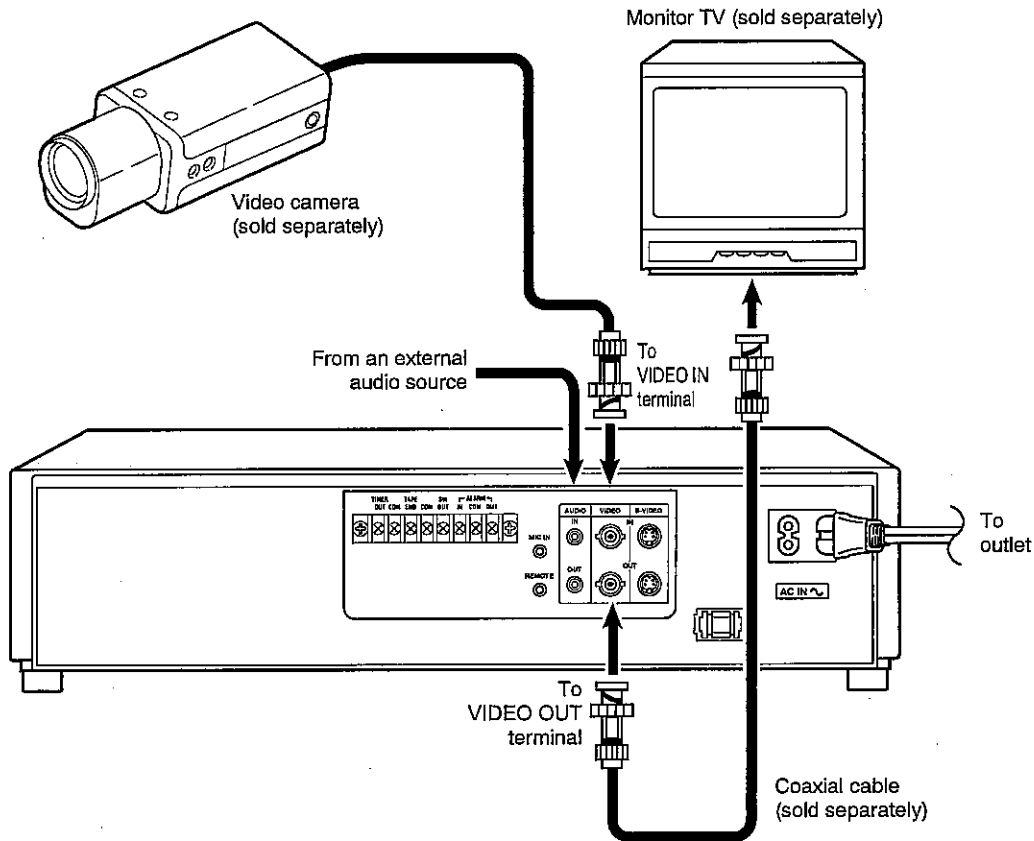


- ① TIMER OUT (timer recording output) terminal
- ② COM (common) terminal
- ③ TAPE END (tape end output) terminal
- ④ COM (common) terminal
- ⑤ SW OUT (switch output) terminal
- ⑥ ALARM IN (alarm input) terminal
- ⑦ COM (common) terminal
- ⑧ ALARM OUT (alarm output) terminal
- ⑨ MIC IN (microphone input) jack
- ⑩ AUDIO IN (audio input) jack
- ⑪ VIDEO IN (video input) jack
- ⑫ S-VIDEO IN (S-video input) jack
- ⑬ AC Power input
- ⑭ S-VIDEO OUT (S-video output) jack
- ⑮ VIDEO OUT (video output) jack
- ⑯ AUDIO OUT (audio output) jack
- ⑰ REMOTE (remote control input) jack

CONNECTIONS

Connect the video camera and monitor TV as shown in the figure below.

NOTE: Make sure to turn the power off on all devices before making the connections.



IMPORTANT NOTE (U. K. Only)

The wires in the mains lead are coloured according to the following code:

Blue: Neutral

Brown: Live

If the colours of the wires in the mains lead of this apparatus do not correspond with the colour markings identifying the terminals in your plug, proceed as follows:

- The wire which is coloured blue must be connected to the terminal which is marked with the letter **N** or coloured blue or black.
- The wire which is coloured brown must be connected to the terminal which is marked with the letter **L** or coloured brown or red.
- Do not connect either wire to the **Earth** terminal.

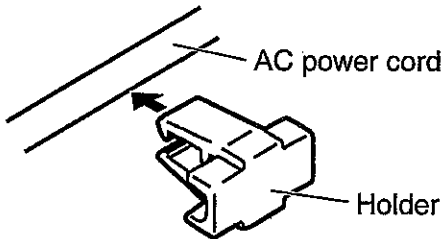
NOTES:

- For more details, please refer to the manuals accompanying all other devices. If the connections are not made properly, it may cause a fire or damage the equipment.
- This VCR is equipped with S-VIDEO input/output connectors for high quality video signal input/output. If connecting this unit to a device equipped with an S-VIDEO input/output connector, please use an S-cable (sold separately).
- When using the **S-VIDEO IN** jack, set the **INPUT SELECT** switch to the "S-VIDEO" position.

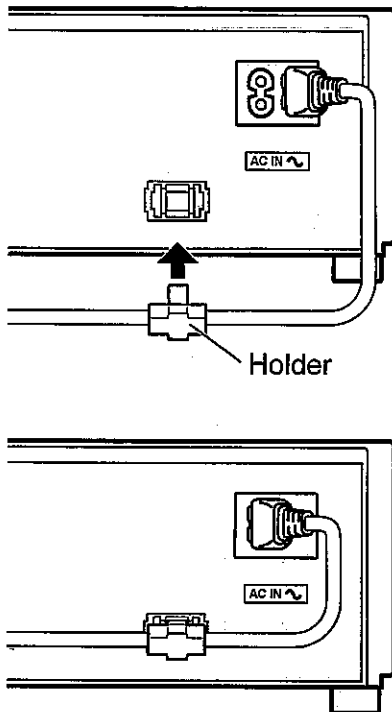
CONNECTIONS

Power cord.

- 1 Plug the power cord (supplied) into the AC power input (AC IN ~) on the VCR back panel. Insert the plug straight and firmly.
- 2 Install the AC power cord into the holder.



- 3 Fix the holder to the VCR back panel.

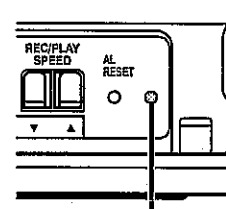


About the memory reset

If the VCR location is changed or to cancel previous settings, please reset the memory as described below.

All the settings as the time and date will be reset, and the security lock will be cancelled. The MENU 1 (USED TIME), the MENU 3 (TIMER SET) and the MENU 5 (ALARM TIME) data cannot be reset.

To reset the memory, press the **MEMORY RESET** button.



MEMORY RESET
button

VIDEO CASSETTE TAPES

Use only video cassette tapes bearing the **VHS** or **SVHS** logo. This **SVHS** VCR is designed to give high quality recording and playback using **SVHS** cassette tapes. However, this VCR can also use normal VHS cassette tapes for normal recording and playback. This VCR was primarily designed for use with E-180 cassette tapes, it is recommended to use E-180 VHS video cassette tapes for optimal performance.

Handling Cassette Tapes

The cassette tapes should always be stored vertically, in their cases, away from high temperatures, magnetic fields, direct sunlight, dirt, dust and locations subject to mold formation.

Do not tamper with the cassette mechanism and never touch the tape with your fingers.

Protect the cassette tapes from shocks or strong vibrations.

To Protect your Recordings

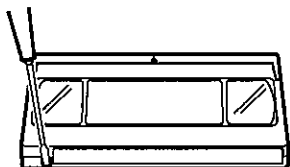
After having recorded a tape, if you wish to keep the recording, use a flathead screwdriver to break off the erasure-prevention tab on the cassette.

To record again on a tape without erasure-prevention tab, cover the hole with adhesive tape.

NOTE:

- If you try to record on a cassette without erasure-prevention tab, the VCR will eject the cassette.

Erasure-prevention tab



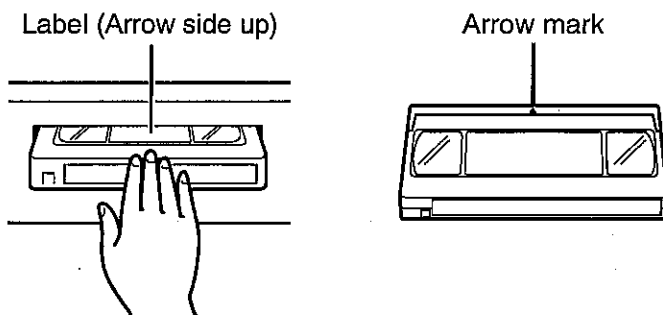
To prevent accidental erasure, remove the tab after recording.



To record again, cover the hole with vinyl tape.

Loading

- 1 Place the cassette, label side up, in the loading slot. Gently push the centre of the cassette until it is loaded automatically.
 - When the cassette is loaded, the cassette indicator "●●" will light on the digital display.
 - The time display will switch to the reset counter "0_H 00_M 00_S" display.



Unloading

- 1 In STOP mode, press the **EJECT** button.
 - The cassette is automatically ejected.

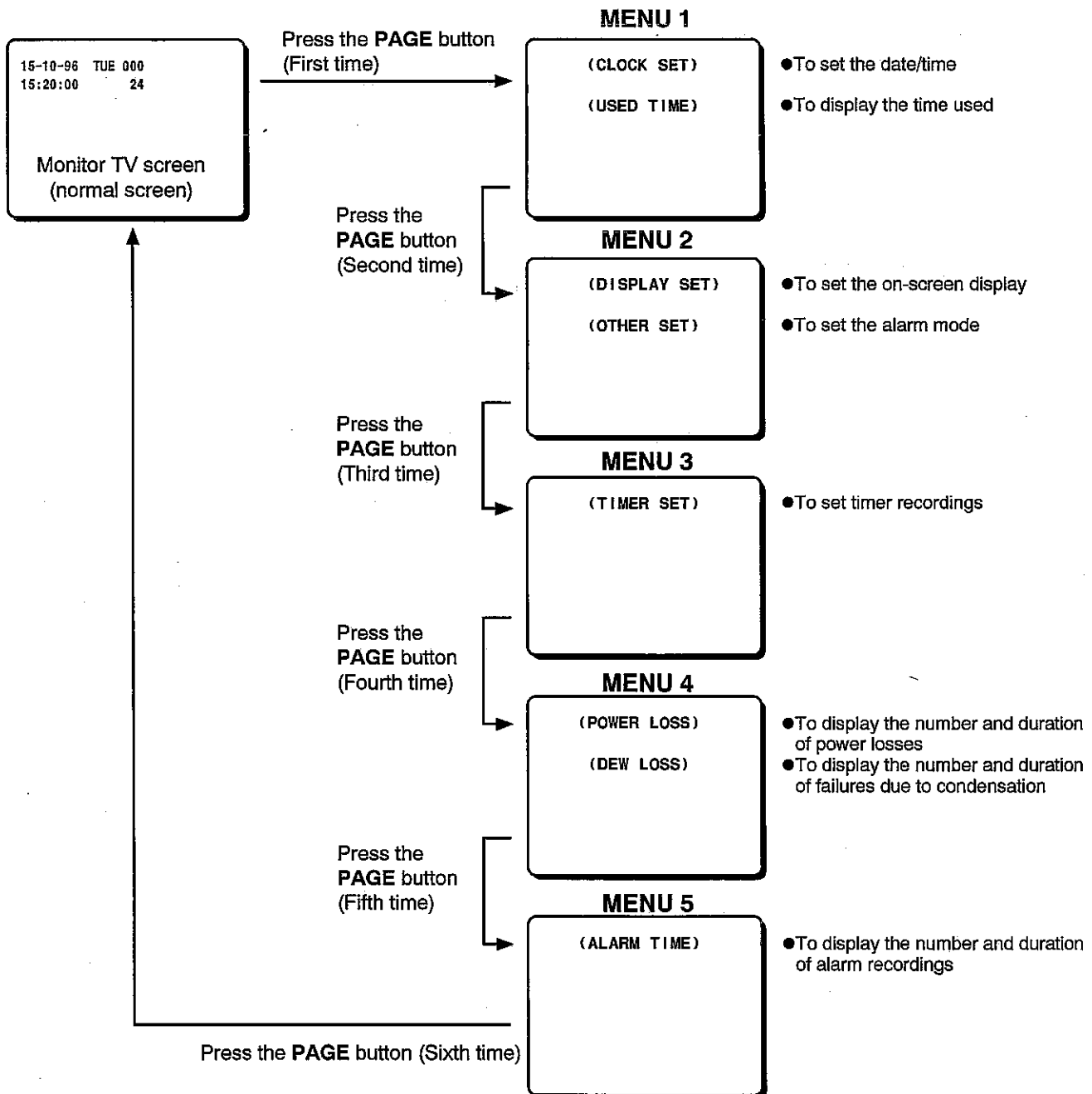
NOTES:

- Do not insert any object in the cassette loading slot, as that may cause injury and damages to the VCR.
- If your hand gets stuck in the cassette loading slot, unplug the power cord and consult the dealer where the unit was bought. Do not forcibly pull the hand out as that may cause severe injuries.

TYPES OF ON-SCREEN DISPLAYS AND DISPLAY SEQUENCE

NOTES:

- If the VCR is in timer recording stand-by mode (the "□" indicator displayed on the digital display), first set the **TIMER REC** switch to the "OFF" position. When finished, press the **PAGE** button until the normal screen is displayed and set the **TIMER REC** switch back to the "ON" position to return the VCR to timer recording stand-by mode.
- During recording or playback the menus cannot be displayed.
- If there is no input at the **VIDEO IN** or **S-VIDEO IN** jacks, the menus will not be displayed.



Example: To set the clock to October 15, 1996 at 3:20 PM (15:20).

Clock and Language Setting

- 1 Turn the power on to all devices used.

MENU 1 Initial values

(CLOCK SET)	
YEAR	00
MONTH	01
DAY	01 SAT
HOUR	00
MINUTE	00
SECOND	00
STANDARD	
(USED TIME)	
HEAD	0000H POWER 0000H

- 2 Press the **PAGE** button, the MENU 1 (CLOCK SET) is displayed.
- 3 Press the **REC/PLAY SPEED** ▼ (or ▲) button, to set the year (ex: 96 for 1996), then press the **SHIFT** ↓ button.

NOTE:

- The last 2 digits only are displayed.
 - *The day of the week is set automatically.*

- 4 Press the **REC/PLAY SPEED** ▼ (or ▲) button, to set the month (ex: 10), then press the **SHIFT** ↓ button.
- 5 Press the **REC/PLAY SPEED** ▼ (or ▲) button, to set the day (ex: 15), then press the **SHIFT** ↓ button.
- 6 Press the **REC/PLAY SPEED** ▼ (or ▲) button, to set the hours (ex: 15 for 3 PM), then press the **SHIFT** ↓ button.
- 7 Press the **REC/PLAY SPEED** ▼ (or ▲) button, to set the minutes (ex: 20), then press the **SHIFT** ↓ button.
- 8 For accurate clock setting, press the **REC/PLAY SPEED** ▼ button timed with a time broadcast, or other accurate time signal, this will start the seconds counting from 00.
- 9 Press the **SHIFT** ↓ button.
- 10 Press the **REC/PLAY SPEED** ▼ (or ▲) button, to set STANDARD (standard time)/DAYLIGHT (summer time).

MENU 1 Example setting

(CLOCK SET)	
YEAR	96
MONTH	10
DAY	15 TUE
HOUR	15
MINUTE	20
SECOND	00
STANDARD	
(USED TIME)	
HEAD	0003H POWER 0007H

- 11 Press the **PAGE** button until the normal screen is displayed.
 - *The setting procedure is now completed.*

NOTE:

- If a cassette tape is not loaded, you can reset the seconds to "00", by pressing the **COUNTER RESET** button.

Standard/Daylight Time Adjustment

The clock time can be changed to daylight saving time (by adding one hour) or standard time (by subtracting one hour).

- 1 Press the **PAGE** button, the MENU 1 (CLOCK SET) is displayed.

MENU 1 Example setting

(CLOCK SET)	
YEAR	96
MONTH	10
DAY	15 TUE
HOUR	15
MINUTE	20
SECOND	00
STANDARD	
(USED TIME)	
HEAD	0003H POWER 0007H

- 2 Press the **SHIFT** ↓ button, until STANDARD (or DAYLIGHT) is flashing.
- 3 Press the **REC/PLAY SPEED** ▼ (or ▲) button.
 - *The display changes to DAYLIGHT (or STANDARD).*
 - *One hour is added to (or subtracted from) the current time.*
- 4 Press the **PAGE** button until the normal screen is displayed.
 - *The setting procedure is now completed.*

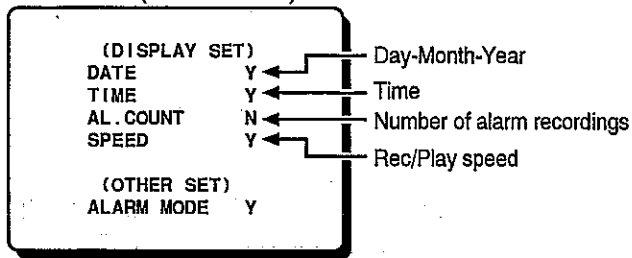
SETTING THE ON-SCREEN DISPLAY

Selecting the On-screen Display

You can select to display or not the date, time, number of alarm recordings and speed mode.

- 1 Turn the power on to all devices used.
- 2 Press the **PAGE** button to display the MENU 2 (DISPLAY SET).

MENU 2 (Initial screen)



- 3 Press the **SHIFT ↓** button, until the "Y" corresponding to the item you wish to cancel the on-screen display is flashing.
- 4 Press the **REC/PLAY SPEED ▼** (or **▲**) button to set "N" instead of "Y".

Y displayed

N not displayed

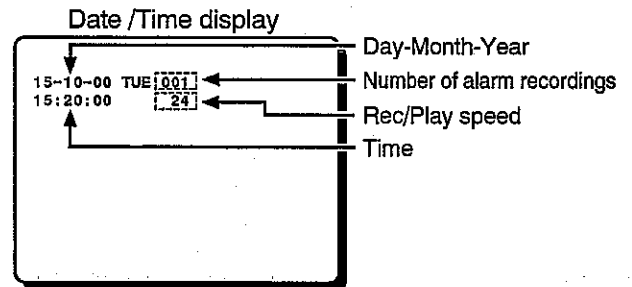
- 5 Press the **PAGE** button until the normal screen is displayed.
 - The setting procedure is now completed.

NOTE:

- If at step 4 above, "N" was set for all items, no on-screen display will be recorded.

Changing the Date/Time Display Position

- 1 Turn the power on to all devices used.
- 2 Press the **SHIFT →** (or **↓**) button.
 - The display will move towards the right (or the bottom).



NOTE:

- If the **SHIFT →** (or **↓**) button is kept pressed for 1 second or more the display will move at a faster speed.

NORMAL RECORDING

Normal Recording

- ❶ Turn the power on to all devices used.
- ❷ Load a cassette tape with erasure-prevention tab.
- ❸ Press the **REC/PLAY SPEED** ▼ (or ▲) button to set the recording speed.
 - *The recording speed is displayed on-screen and on the digital display.*
- ❹ Set the **INPUT SELECT** switch to the "LINE" or "S-VIDEO" position.
 - LINE To record from the **VIDEO IN** jack
 - S-VIDEO . . . To record from the **S-VIDEO IN** jack
- ❺ Press the **REC** button.
 - *The "O" indicator is displayed on the digital display and recording starts.*

NOTES:

- If the **REPEAT REC** switch is set to the "OFF" position, recording will continue to the end of the tape, then the VCR will rewind the tape to the beginning then stop. ("OFF" will be displayed on the digital display.)
- When "OFF" is displayed, timer recording and alarm recording will not be possible in order to protect the previous recording on the tape.
- To cancel the "OFF" display, press the **EJECT, PLAY, STOP, FF** or **REW** button.

- ❻ To stop recording, press the **STOP** button.

NOTES:

- A tape recorded on this VCR cannot be played back on another make of time lapse VCR.
- If you press on the **REC** button and the loaded cassette has no erasure-prevention tab, the VCR will eject the cassette.
- During recording, the **PAGE** button will not function (the menu cannot be displayed).

[Recording Speed]

Recording speed	Recording duration (with an E-180 cassette tape)		Recording interval	Audio recording	Tape motion
3	Standard mode	3 hours	1/50 second	Possible	Continuous
12	Time lapse mode	15	0.1		
24		27	0.18		
48		51	0.34		
72		75	0.5		
96		99	0.66		
120		123	0.82		
168		171	1.14		
240		243	1.62		
360		363	2.42		
480		483	3.22		
720	723	4.82	Not possible	Intermittent	
960	963	6.42			

S-VHS Recording

S-VHS recording is only possible on a cassette tape identified by the **S-VHS** logo.

S-VHS recording on an S-VHS cassette tape:

- ❶ Set the **S-VHS** switch to the "ON" position.
 - *The S-VHS LED will light.*

Standard VHS recording on an S-VHS cassette tape:

- ❶ Set the **S-VHS** switch to the "OFF" position.

NOTES:

- During playback, the recording format is automatically detected no setting is necessary.
- S-VHS recording on a standard VHS cassette tape is not possible.

NORMAL RECORDING

Record Pause

Recording can be interrupted temporarily.

- 1 Press the **STILL/AL SCAN** button during recording.
 - The "O" and "III" indicators are displayed on the digital display.

NOTES:

- The image appears on-screen but it is not recorded.
 - If a recording pause continues for 5 minutes or more, the VCR will go into stop mode to avoid damaging the tape.
- 2 To resume recording, press the **STILL/AL SCAN** button again.

Autorepeat Recording

The same tape can be recorded over many times.

- 1 Set the **REPEAT REC** switch to the "ON" position.
 - The **REPEAT LED** will light.
 - ON Autorepeat recording function on
 - OFF Autorepeat recording function off
- 2 Press the **REC** button.
 - *Recording will start. When the tape end is reached, the VCR will rewind it to the beginning regardless of the counter memory, and recording will resume.*

NOTES:

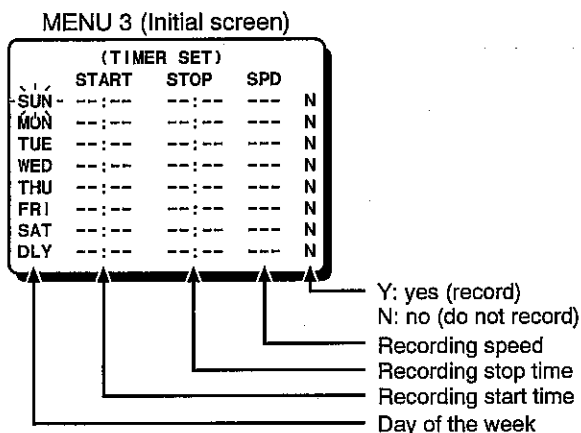
- If "AL" is displayed on the digital display, autorepeat recording will not be possible.
- If during autorepeat recording mode, the **REPEAT REC** switch is set to the "OFF" position, the recording will continue to the end of the tape then it will be rewound to the beginning and stop. "OFF" will be displayed on the digital display.
- If during autorepeat recording mode, an alarm is triggered, alarm recording will take place. The recording will continue to the end of the tape then it will be rewound to the beginning and stop. "OFF" will be displayed on the digital display and autorepeat recording mode is cancelled.

PROGRAMME TIMER RECORDING ① MENU 3

There are two program timer recording methods, daily recording or recording on certain days of the week.

Example 1: To record on every Saturday from 9:00 AM to 5:00 PM (17:00), in 24-hour mode (recording speed).

- ① Make sure that the set date and time are correct.
- ② Load a cassette tape with erasure-prevention tab.
- ③ Set the **INPUT SELECT** switch to the desired position.
- ④ Press the **PAGE** button to display the MENU 3 (TIMER SET).
 - "SUN" (Sunday) will be flashing.



- ⑤ Press the **SHIFT ↓** button, until "SAT" (Saturday) is flashing.
- ⑥ Press the **SHIFT →** button.
 - The recording start hour position starts flashing.
- ⑦ Press the **REC/PLAY SPEED ▼** (or **▲**) button to set the recording start hour (ex: 09), then press the **SHIFT →** button.
 - The recording start minutes position starts flashing.
- ⑧ Press the **REC/PLAY SPEED ▼** (or **▲**) button to set the recording start minutes (ex: 00), then press the **SHIFT →** button.
 - The recording stop hour position starts flashing.
- ⑨ Press the **REC/PLAY SPEED ▼** (or **▲**) button to set the recording stop hour (ex: 17), then press the **SHIFT →** button.
 - The recording stop minutes position starts flashing.

NOTE:

- If the set stop time is earlier than or the same time as the set start time, the VCR will consider the stop time to be the following day, and "T" will be displayed next to the recording stop time.
- ⑩ Press the **REC/PLAY SPEED ▼** (or **▲**) button to set the recording stop minutes (ex: 00), then press the **SHIFT →** button.
 - The "SPD" (recording speed) position will start flashing.
 - ⑪ Press the **REC/PLAY SPEED ▼** (or **▲**) button to select the recording speed (ex: 24), then press the **SHIFT →** button.
 - "N" will start flashing.
 - ⑫ Press the **REC/PLAY SPEED ▼** (or **▲**) button to select "Y".

Y recording will take place

N recording will not take place

Programmed timer recording Example 1

(TIMER SET)			
	START	STOP	SPD
SUN	---	---	N
MON	---	---	N
TUE	---	---	N
WED	---	---	N
THU	---	---	N
FRI	---	---	N
SAT	09:00	17:00	24 Y
DLY	---	---	N

- To programme other timer recordings, repeat steps ⑤ to ⑫.
- ⑬ Press the **PAGE** button until the normal screen is displayed.
 - ⑭ Set the **TIMER REC** switch to the "ON" position.
 - The timer recording indicator "☐" will light on the digital display, the VCR is now in timer recording stand-by mode.

NOTE:

- To modify, cancel or stop timer recording, first set the **TIMER REC** switch to the "OFF" position to cancel the timer recording mode.

Changing a Programme Timer Recording

- ❶ Press the **PAGE** button to display the MENU 3 (TIMER SET).
- ❷ Press the **SHIFT** → (or ↓) button, until the setting to correct is flashing.
- ❸ Press the **REC/PLAY SPEED** ▼ (or ▲) button, to correct the setting.
- ❹ Press the **PAGE** button until the normal screen is displayed.
- ❺ Set the **TIMER REC** switch to the "ON" position.

To Cancel a Programme Timer Recording

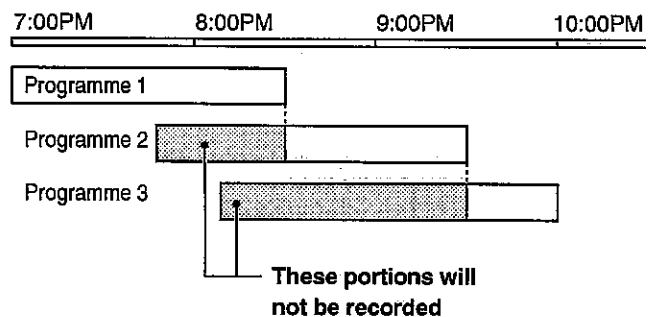
- ❶ Press the **PAGE** button to display the MENU 3 (TIMER SET).
- ❷ Press the **SHIFT** → (or ↓) button, until the "Y" corresponding to the timer recording to cancel is flashing.
- ❸ Press the **REC/PLAY SPEED** ▼ (or ▲) button, to select "N".
- ❹ Press the **PAGE** button until the normal screen is displayed.
- ❺ Set the **TIMER REC** switch to the "ON" position.

To Cancel all Programme Timer Recordings

- ❶ Press the **PAGE** button to display the MENU 3 (TIMER SET).
- ❷ Press the **AL RESET** button.
 - *All programmed timer recordings are erased.*
- ❸ Press the **PAGE** button until the normal screen is displayed.

NOTES:

- During timer recording or timer recording stand-by, all the buttons on the VCR, except the **TIMER REC** switch, are disabled.
- If there was a power loss, the recording will be interrupted. When the power is restored, the recording will resume if the stop time has not yet been reached, and "P" will be displayed on the digital display. The VCR internal battery is completely recharged after the VCR has been connected to a live outlet for 48 hours, and it will maintain all the VCR settings memory for up to 30 days.
- Set the timer recordings so that the recording times do not overlap. If they do, the one with the earliest recording start time will have priority. (See chart below.)



- To set two or more timer recordings for a same day of the week, press the **SHIFT** → (or ↓) button, until the day of the week for the second recording is flashing, then press the **REC/PLAY SPEED** ▼ (or ▲) button, to set the desired day of the week.

PROGRAMME TIMER RECORDING ③ MENU 3

Example 2: To record every week from Friday at 5:20 PM (17:20) to Monday at 7:50 AM, in 72-hour mode (recording speed).

NOTE:

- A timer recording of more than 24 hours can only be set on the last two (7th and 8th) lines of the MENU 3 (TIMER SET).

- ① Follow steps ① to ④ under "PROGRAMME TIMER RECORDING ①".
- ② Press the **SHIFT ↓** button, until the day of the week of the 7th line is flashing.
- ③ Press the **REC/PLAY SPEED ▼** (or **▲**) button to set the desired start day of the week (ex: FRI), then press the **SHIFT →** button.
 - *The recording start hour position starts flashing.*
- ④ Press the **REC/PLAY SPEED ▼** (or **▲**) button to set the recording start hour (ex: 17), then press the **SHIFT →** button.
 - *The recording start minutes position starts flashing.*
- ⑤ Press the **REC/PLAY SPEED ▼** (or **▲**) button to set the recording start minutes (ex: 20), then press the **SHIFT →** button.
 - *The recording stop hour position starts flashing.*
- ⑥ Press the **REC/PLAY SPEED ▼** (or **▲**) button to set "**" for the recording stop hour.
 - *The rest of the line settings will change to "**: ** ** *", and the start time of the next line will change to "**: **" automatically.*
- ⑦ Press the **SHIFT →** (or **↓**) button, until the day of the week of the 8th line is flashing.

- ⑧ Press the **REC/PLAY SPEED ▼** (or **▲**) button, to set the desired stop day of the week (ex: MON), then press the **SHIFT →** button.
 - *The recording stop hour position starts flashing.*
- ⑨ Press the **REC/PLAY SPEED ▼** (or **▲**) button to set the recording stop hour (ex: 07), then press the **SHIFT →** button.
 - *The recording stop minutes position starts flashing.*
- ⑩ Press the **REC/PLAY SPEED ▼** (or **▲**) button to set the recording stop minutes (ex: 50), then press the **SHIFT →** button.
 - *The "SPD" (recording speed) position will start flashing.*
- ⑪ Press the **REC/PLAY SPEED ▼** (or **▲**) button to select the recording speed (ex: 72), then press the **SHIFT →** button.
 - *"N" will start flashing.*
- ⑫ Press the **REC/PLAY SPEED ▼** (or **▲**) button to select "Y".

Programmed timer recording Example 2

	(TIMER SET)			
	START	STOP	SPD	
SUN	--:--	--:--	---	N
MON	--:--	--:--	---	N
TUE	--:--	--:--	---	N
WED	--:--	--:--	---	N
THU	--:--	--:--	---	N
FRI	--:--	--:--	---	N
FRI	17:20	**:**	***	*
MON	**:**	07:50	72	Y

← 7th line

- ⑬ Follow steps ⑬ and ⑭ under "PROGRAMME TIMER RECORDING ①".

ALARM RECORDING

Alarm Recording Setting

Alarm recording is performed when there is an input (trigger) at the **ALARM IN** terminal, "AL" is displayed on the digital display.

- ❶ Make all necessary connections.
- ❷ Set the **ALARM SPEED** switch to the desired recording speed.
 - 3H 3-hour mode recording
 - 12H 12-hour mode recording
 - NC Recording at the speed already set
- ❸ Set the **ALARM DURATION** switch to the desired recording duration.
 - 1M 1-minute recording
 - 3M 3-minutes recording
 - CC Recording as long as the alarm signal is being input (minimum recording of 5 seconds)
- ❹ Press the **PAGE** button to display the MENU 2 (OTHER SET).
- ❺ Press the **SHIFT ↓** button, until the "ALARM MODE" setting is flashing.
- ❻ Press the **REC/PLAY SPEED ▼** (or **▲**) button to select "Y".
 - Y Alarm recording will take place when there is an alarm trigger
 - N Alarm recording will not take place, even if there is an alarm trigger
- ❼ Press the **PAGE** button, until the normal screen is displaying.

NOTES:

- During alarm recording all buttons are disabled.
- If the alarm recordings are going to be played back with the alarm scan search function, set the recording speed to 3-hour mode, and the alarm recording duration to 1M or 3M.
- When there is a power loss during alarm recording, if the power is restored within the recording set during, alarm recording will continue.
- If an alarm trigger is received during autorepeat recording mode, the autorepeat recording mode is cancelled.
- If the power is off, recording will be conducted for the set duration, then the unit will return to the power off state.
- If the **AL RESET** button is pressed, "AL" is erased from the digital display and reset the alarm counter to "000" (all the data of MENU 5 (ALARM TIME) is reset).

Alarm Recording Counter Display

- During alarm recording, "AL" will be flashing on the digital display.
- When an alarm trigger is received, the on-screen display will indicate the number of alarm recordings and the number of alarm triggers will start flashing.
- The maximum display number of alarm recordings is "999", at the next alarm recording the counter will indicate "000".

Connections to the ALARM IN/OUT Terminals

- Alarm input signal
Connect a make-contact (no voltage) switch between the **ALARM IN** and **COM** terminals.
- Alarm output signal
Normally DC 5V are output between the **ALARM OUT** and the **COM** terminals. When an alarm input (trigger) is received and the unit is recording, the output falls to 0V. Once the alarm recording is over, the output returns to DC 5V.

NORMAL PLAYBACK

Normal Playback

- ❶ Turn on the power to the VCR and TV monitor.
- ❷ Load the video cassette tape.
- ❸ Press the **REC/PLAY SPEED** ▼ (or ▲) button to select the playback speed.
 - *The selected playback speed is displayed on the digital display.*
- ❹ Press the **PLAY** button.
 - *Playback starts.*
 - *If necessary, adjust the tracking to eliminate the noise from the picture.*
- ❺ To stop playback, press the **STOP** button.
 - *To advance or rewind the tape, press the **FF** or **REW** button.*

NOTES:

- A tape recorded on another make of time lapse VCR cannot be played back on this unit.
- A tape recorded on this VCR cannot be played back on another make of time lapse VCR.

Tracking Control

If there is noise in the image during playback, it can be minimized using the **TRACKING NORMAL** or **TRACKING SLOW** controls.

- In 3-hour mode: correct using the **TRACKING NORMAL** control.
- In 12- to 960-hour mode: correct using the **TRACKING SLOW** control.

Sharpness Control

Adjust the **SHARPNESS** control towards "SHARP" or "SOFT" for the desired sharpness of the image.

Audio Playback

- Audio playback is only possible in 3-hour, 12-hour and 24-hour modes.
- The playback speed has to be the same as the recording speed, for normal playback of the audio.
- For a tape recorded in 12-hour and 24-hour recording modes, to playback the audio, press the **ADV/AUDIO ON** button after pressing the **PLAY** button. "A" will be displayed to the left of the playback speed on the digital display.

NOTE:

- Noise will appear in the image when audio playback is used.

Tape Playback Speed

Recording speed	Playback speed												
	3	12	24	48	72	96	120	168	240	360	480	720	960
3	1	1/5	1/9	1/17	1/25	1/33	1/41	1/57	1/81	1/121	1/161	1/241	1/321
12	5	1	5/9	5/17	1/5	5/33	5/41	5/57	5/81	5/121	5/161	5/241	5/321
24	9	9/5	1	9/17	9/25	3/11	9/41	9/57	1/9	9/121	9/161	9/241	3/107
48	17	17/5	17/9	1	17/25	17/33	17/41	17/57	17/81	17/121	17/161	17/241	17/321
72	25	5	25/9	25/17	1	25/33	25/41	25/57	25/81	25/121	25/161	25/241	25/321
96	33	33/5	11/3	33/17	33/25	1	33/41	11/19	11/27	3/11	33/161	33/241	11/107
120	41	41/5	41/9	41/17	41/25	41/33	1	41/57	41/81	41/121	41/161	41/241	41/321
168	57	57/5	57/9	57/17	57/25	19/11	57/41	1	57/81	57/121	57/161	57/241	57/321
240	81	81/5	9	81/17	81/25	27/11	81/41	81/57	1	81/121	81/161	81/241	81/321
360	121	121/5	121/9	121/17	121/25	11/3	121/41	121/57	121/81	1	121/161	121/241	121/321
480	161	161/5	161/9	161/17	161/25	161/33	161/41	161/57	161/81	161/121	1	161/241	161/321
720	241	241/5	241/9	241/17	241/25	241/33	241/41	241/57	241/81	241/121	241/161	1	241/321
960	321	321/5	107/3	321/17	321/25	107/11	321/41	321/57	321/81	321/121	321/161	321/241	1

Example: If a tape recorded in 24-hour mode recording speed is played back in 3-hour mode playback speed, the playback will be at 9 times the normal speed.

SPECIAL PLAYBACK

Picture Search

- 1 Press the **FF** (or **REW**) button, during normal playback.
 - *The image can be seen while the tape is advanced (or rewound) at high speed.*
- 2 To return to normal playback, press the **PLAY** button.

NOTES:

- During picture search, noise (horizontal bars) will appear in the picture.
- The sound is muted.

Still Image

- 1 Press the **STILL/AL SCAN** button, during normal playback.
 - *A still image can be viewed.*
- 2 To return to normal playback, press the **PLAY** button.

NOTES:

- If still mode continues for 5 minutes or more, the VCR will go into stop mode to avoid damaging the tape.
- If the image is unstable (rolling vertically), adjust the **STILL ADJ** control to correct.

STILL ADJ Control

If the image is unstable (rolling vertically) during still image mode, it can be minimized using the **STILL ADJ** control.

Frame Advance

- 1 Press the **ADV/AUDIO ON** button, during still image mode.
 - *The still image is advanced of one image (field).*
- 2 To return to normal playback, press the **PLAY** button.

Reverse Playback

- 1 Press and hold the **REV** button, during normal playback.
 - *Reverse playback will start.*
- 2 To return to normal playback, release the **REV** button.

NOTES:

- During reverse playback, noise will appear in the picture.
- Reverse playback is only possible during 3-hour playback speed mode.
- The sound is muted.

Alarm Scan

- 1 Press the **STILL/AL SCAN** button during stop mode.
 - *"AL SCAN" will be displayed on the digital display and on screen.*
- 2 Press the **FF** (or **REW**) button.
 - *The unit will advance (or rewind) the tape at high speed and playback the first 5 seconds of every alarm recording.*
 - *To cancel the alarm scan mode, press the **STOP** button.*
- 3 While the desired recording is being played back, press the **PLAY** button.
 - *Playback will start, alarm scan mode is cancelled.*

NOTE:

- When the **ALARM SPEED** switch is set to 3H, the alarm scan function will only find alarm recordings of 1 minute or more.

TAPE COUNTER

Using the counter, it is easy to find a desired recording.

- ① Press the **COUNTER RESET** button, at the beginning of the desired recording.
 - *The counter will be reset to "0_H 00_M 00_S".*
- ② Press the **COUNTER MEMORY** button.
 - **"M"** is displayed on the digital display.
 - *To cancel the counter memory function, press the **COUNTER MEMORY** button a second time.*
- ③ After recording or playback, press the **REW** button in stop mode.
 - *The tape is rewound to the counter "0_H 00_M 00_S" reading.*
 - *If you rewind the tape past the "0_H 00_M 00_S" position, press the **FF** button.*

NOTES:

- There is no tape counter indication for the blank portions of the tape.
- In the 3-hour recording speed mode only, the tape counter indicates real hours, minutes and seconds.
- In the other recording speed modes, the tape counter indication is a ratio of the 3-hour mode base indication. (In 12-hour recording mode, each "second" of the tape counter actually represents approximately $(12/3) + 1 = 5$ real seconds.)
- There may be a slight discrepancy between the position shown on the tape counter and the actual tape position.
- When rewinding the tape past the "0_H 00_M 00_S" position, a minus (-) sign will be displayed.

Calculating the remaining tape duration using the tape counter display

On a E-180 cassette tape, it is possible to record 3 hours (180 minutes) in the 3-hour recording speed mode.

If the recording is started at the beginning of the tape and the tape counter is reset to "0_H 00_M 00_S", the tape usage duration and remaining tape duration can be calculated.

$$\text{Tape usage duration} = \text{Counter reading value} \times \left(\frac{\text{Recording speed value}}{3} + 1 \right)$$

$$\text{Remaining tape duration} = (\text{Recording speed value} + 3) - \text{Tape usage duration}$$

Example:

If the recording tape speed is 24-hour mode and the counter reading is "1_H 30_M 00_S" (1.5 hours).

$$\text{Tape usage duration} = 1.5 \times \left(\frac{24}{3} + 1 \right) = 13.5 \text{ (hours)}$$

$$\text{Remaining tape duration} = (24 + 3) - 13.5 = 13.5 \text{ (hours)}$$

SETTING THE SECURITY LOCK

The security lock function is designed to prevent accidental stopping of recording if the **STOP** button is pressed inadvertently.

- 1 While holding the **SHIFT →** button, press the **REC/PLAY SPEED ▲** button.

- "1" is displayed on the digital display.

To cancel the security lock, while holding the **SHIFT →** button, press the **REC/PLAY SPEED ▼** button, "1" will be erased from the digital display.

NOTES:

- While the security lock is engaged all commands, except the one to cancel the security lock, are disabled.
- The security lock cannot be engaged while a menu is displayed.

CHECKING USAGE DURATION

MENU 1

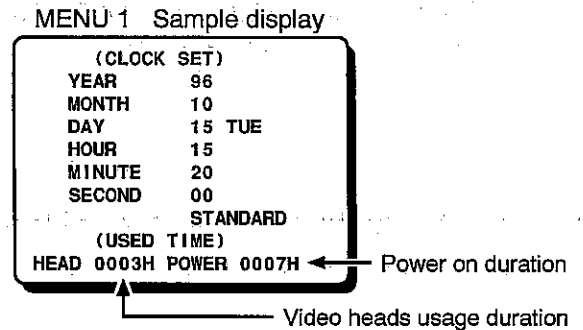
- 1 Press the **PAGE** button the MENU 1 (USED TIME) is displayed.

(USED TIME) The video heads usage duration and the power on duration are displayed.

- 2 Press the **PAGE** button until the normal screen is displayed.

NOTE:

- The (USED TIME) data cannot be reset.



CHECKING POWER FAILURE AND FAILURE DUE TO CONDENSATION

MENU 4

- Press the **PAGE** button to display the MENU 4 (POWER LOSS), (DEW LOSS).
 - (POWER LOSS) ... The number of power losses, and the date and time of the most recent power failure and recovery are displayed.
 - (DEW LOSS) The number of failures due to condensation, and the date and time of the most recent failure and recovery are displayed.

MENU 4 Sample display

(POWER LOSS)			
002	FAIL	20-12	07:15
	RET	20-12	07:30
(DEW LOSS)			
003	FAIL	22-12	11:00
	RET	22-12	12:00

← Date and time of the most recent power failure
 ← Date and time of the most recent power recovery
 ← Date and time of the most recent failure due to condensation
 ← Date and time of the most recent recovery from failure due to condensation
 ← Number of failures due to condensation
 ← Number of power losses

- Press the **PAGE** button, until the normal screen is displaying.

NOTES:

- If the **PL RESET** button is pressed while the MENU 4 is displayed, the (POWER LOSS) and (DEW LOSS) data is reset.
- If the **PL RESET** button is pressed while the normal screen is displayed, "P" is erased from the digital display. However, the (POWER LOSS) data is not reset.

CHECKING THE ALARM RECORDINGS TIME

MENU 5

- Press the **PAGE** button to display the MENU 5 (ALARM TIME).
 - The number of alarm triggers, and the 8 most recent alarm recording times are displayed.

NOTE:

- The data for the previous alarm recordings is erased.

- Press the **PAGE** button, until the normal screen is displaying.

NOTE:

- If the **AL RESET** button is pressed, the MENU 5 (ALARM TIME) data is erased. "AL" will be erased from the digital display.

MENU 5 Sample display

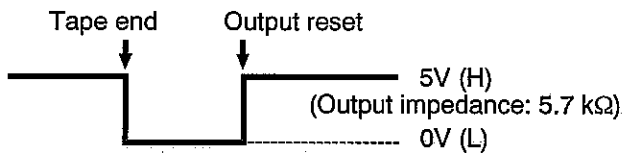
(ALARM TIME)		
008	03-12	07:00
	05-11	12:00
	25-10	10:55
	22-10	11:00
	30-09	08:22
	05-09	09:00
	31-08	02:11
	16-08	06:45

↑ Number of alarm triggers
 ↑ Date
 ↑ Time

ABOUT THE OUTPUT TERMINALS

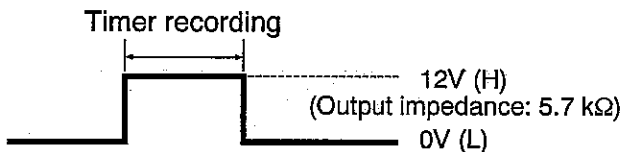
TAPE END Terminal

- During recording, when the end of the tape is reached, the output becomes 0V (Low). When the end of the tape is reached, "OFF" will be displayed on the digital display.
- If the **REPEAT REC** switch is set to the "ON" position, the output becomes 0V (Low) for about 2 seconds only.
- To reset the output, press the **STOP** or **EJECT** button.



TIMER OUT Terminal

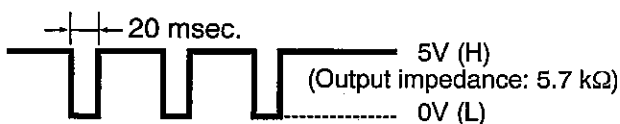
- During timer recording DC 12 V (High) are output. (During timer recording stand-by mode, the output is 0V (Low)).



SW OUT Terminal

When recording in time lapse mode (12- or 960-hour mode), a pulse signal (0V (Low)) is output at the **SW OUT** terminal after each recording period.

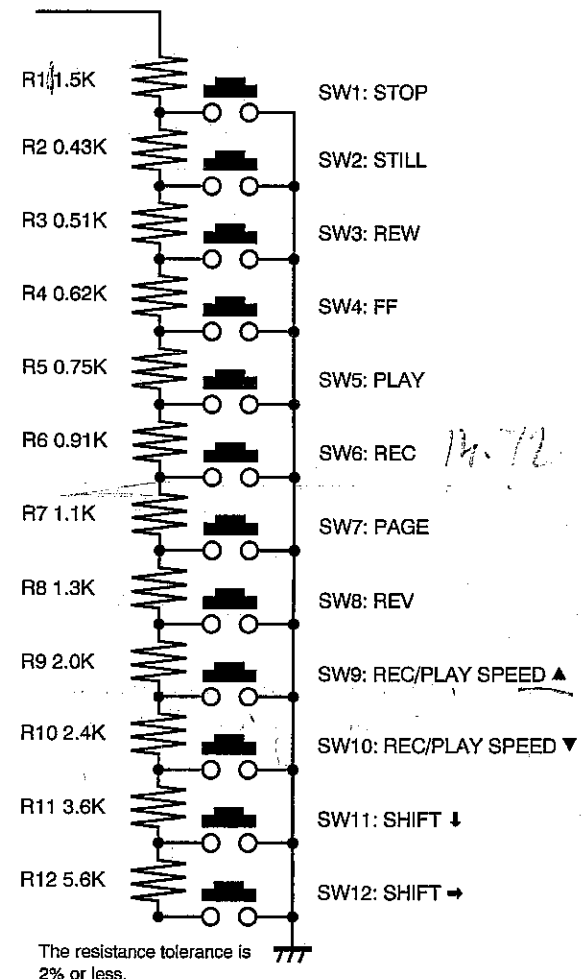
This terminal is usually connected to the switch input (SW IN) of devices like a camera switcher unit, or a quad compressor.



REMOTE Jack

- Remote control of the VCR is possible by connecting a remote controller with a circuit such as indicated below, to the **REMOTE** jack.
- Use a 3.5 mm mini-jack type plug.
- The connection should be done using a shielded cable no more than 5 meters long.

Remote control circuit



DAILY INSPECTION

The following daily inspections are recommended in order to assure long-term and trouble-free operation of the unit.

The daily inspections are particularly important if using autorepeat recording.

Inspection Procedure

- ❶ Turn on the power to the VCR, camera, TV monitor and other connected devices.
- ❷ Check that the image received on the TV monitor is correct.
- ❸ Check that the on-screen display of the date and time is correct.
- ❹ Press the **REW** button to rewind the recorded tape a few seconds.
- ❺ Press the **PLAY** button and check that the playback image is correct.
 - Check in particular playback of time lapse recording (12- or 960-hour mode).
- ❻ Check that the recorded date and time are correct.

NOTES:

- If the security lock is engaged, it has to be released before proceeding to the inspection.
- If any problem is discovered during the inspection, turn off the VCR, unplug the power cord then consult your dealer.

TROUBLESHOOTING GUIDE

If the unit does not operate normally when you follow the instructions indicated in the manual, please refer to the table below.

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
No power	The power cord is not correctly connected to the wall outlet	Connect the power cord firmly into the wall outlet
	The unit is in timer recording stand-by mode	This is normal, not a malfunction
No image displayed on the monitor TV	The connections are not correct	Check that all connections are correct
	The power to the camera and/or monitor TV is not turned on	Turn all connected devices power on
The buttons do not respond	A cassette tape is not loaded	Load a cassette and turn the power on
	All functions are suspended due to condensation	Wait for the "ddd" indicator to go off
	Alarm recording	Wait for the alarm recording to end
	The security lock is engaged	Cancel the security lock
Recording is not possible (the tape is ejected)	The loaded cassette has no erasure-prevention tab	Load a cassette tape with erasure-prevention tab or cover the tab hole with adhesive tape
Autorepeat recording is not possible	"AL" is displayed on the digital display	Press the AL RESET button to turn off the "AL" indicator
Timer recording is not possible	The date and time are not set correctly	Set the date and time correctly
	The unit is not set to timer recording stand-by mode	Set the TIMER REC switch to the "ON" position
	"N" is selected for the timer recordings	Be sure to select "Y" for the programmed timer recordings
Alarm recording is not possible	"OFF" is displayed on the digital display	Press the EJECT, STOP, FF, REW or PLAY button to turn the indicator off
Noise in the playback picture	The video heads need cleaning	Clean the video heads
The cassette tape cannot be ejected	Problem with the system	Turn the power off, then on again

Periodic Inspection and Maintenance

Periodic inspection and maintenance should be referred to your dealer.

If there is noise in the playback picture, and it cannot be corrected using the tracking control, it may indicate that the video heads need cleaning.

The video heads should be inspected every 1,000 hours of use to determine if they need to be replaced.

The video heads usage can be checked using the MENU 1 (USED TIME).

After a Power Failure

If after a power failure the recording speed is reset to 3-hour mode, it is due to insufficient backup battery charge. This is not a malfunction.

System Down

If the unit does not function at all, try the following.

- ❶ Unplug the power cord then plug it back in.
- ❷ Reset the memory. (Press the **MEMORY RESET** button. Under normal conditions, do not touch the **MEMORY RESET** button.)
- ❸ If the problem is not corrected after performing steps ❶ and ❷ a few times, consult your dealer.

SPECIFICATIONS

General Specifications

Recording method	Dual-azimuth dual-head rotating helical scanning system
Audio recording	In 3-, 12-, and 24-hour modes
Tape speed	23.39 mm /sec (3-hour mode)
Specified video cassette tape	VHS 1/2 inch video cassette tape
Recording/playback time	3, 12, 24, 48, 72, 96, 120, 168, 240, 360, 480, 720 and 960 hours (when using E-180 tape)
Fast forward/rewind time	approximately 4 minutes (when using E-180 tape)
Television system	PAL color TV system

Video

Recording method	Luminance signal: FM recording Chrominance signal: Down-converted direct recording
Video input	1 Vp-p, BNC, 75 Ω , unbalanced
Video output	1 Vp-p, BNC, 75 Ω , unbalanced
S-VIDEO input	Separate YC signal, DIN connector
S-VIDEO output	Separate YC signal, DIN connector
Horizontal resolution	Black & white mode: 350 line or more Color mode: 240 line or more

Audio

Input	-7.8 dBs, RCA pin jack, 100 k Ω , unbalanced
Output	-7.8 dBs, RCA pin jack, 600 Ω , unbalanced
Microphone input	-60 dBs, 3.5 mm mini jack, 600 Ω , unbalanced

Connectors

Alarm input	Contact closes with no voltage
Alarm output	DC 5 V (± 0.5)/5.7 k Ω
Tape end output	DC 5 V (± 0.5)/5.7 k Ω
Warning output	DC 5 V (± 0.5)/5.7 k Ω
Switch output	DC 5 V (± 0.5)/5.7 k Ω
Timer output	DC 12 V (± 0.5)/5.7 k Ω
Common	0 V (GND)
Remote control input	3.5 mm mini jack

Other Specifications

Operating temperature range	5°C to 40°C
Operating humidity range	80% or less
Power requirements	220 - 240 V AC, 50 Hz
Power consumption	22 W
Dimensions	420 (W) x 99 (H) x 344 (D) mm
Weight	5.6 kg

NOTE: The specifications and external appearance of this unit are subject to change without notice.



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